

DOCUMENT RESUME

ED 083 267

TM 003 228

AUTHOR Bergeth, Robert L.
TITLE An Analysis of the Bryant YES Center Student Reading and Math Growth, 1971-1972.
INSTITUTION Minneapolis Public Schools, Minn. Dept. of Research and Evaluation.
REPORT NO C-71-74
PUB DATE Aug 72
NOTE 16p.; DIR-1

EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS *Arithmetic; Intermediate Grades; *Measurement Instruments; *Reading Tests; Remedial Courses; *Student Testing; *Test Results
IDENTIFIERS *Bryant YES Center

ABSTRACT

The Bryant Youth Educational Support Center (YES) was established to meet the needs of Bryant Junior High students who were socially maladjusted and/or academically underachieving. The primary objectives of the center are to provide basic-skills remedial instruction and to modify inappropriate behavior. During the 1971-1972 school year, 50 students were enrolled at the center, of whom 47 took standardized achievement tests in reading and math in October 1971 and May 1972. The tests were the Gates-MacGinitie Test in Reading Comprehension and Vocabulary, Stanford Achievement Test in Word Meaning, Paragraph Meaning, Arithmetic Computation, Arithmetic Concepts, and Arithmetic Applications. The same tests were taken on both the pretest and posttest. Results of the tests showed that the students made excellent progress in reading and made good progress in arithmetic. The test results are tabulated. (Author/DB)

ED 083267

TH 003 038

Minneapolis Public Schools

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

An Analysis of the Bryant YES Center
Student Reading and Math Growth
1971-1972

Robert L. Bergeth, Ph.D.
Title I Program Evaluator

A Title I, ESEA Funded Project

Ideas expressed in this report do not necessarily reflect the official position of the Minneapolis Public School Administration nor the Minneapolis School Board.

Research and Evaluation Department
Educational Services Division
807 N. E. Broadway
Minneapolis, Minnesota 55413

August 1972

Order No. C-71-74

Minneapolis Public Schools
An Analysis of the Bryant YES Center
Student Reading and Math Growth
1971-1972

Summary

The Bryant Youth Educational Support Center (YES) was established in the fall of 1968 through the combined efforts of the school, community, and industry to meet the needs of Bryant Junior High students who were socially maladjusted and/or academically underachieving. The primary objectives of the Center are to provide basic skills remedial instruction and to modify inappropriate behavior.

See page 1

During the 1971-72 school year, the YES Center operated on a budget of \$186,040. Title I, ESEA contributed \$56,308 of this amount.

There were 50 students enrolled at the Center during the year. Forty-seven of these students took standardized achievement tests in reading and math in mid-October, 1971 and mid-May, 1972. The students took the Gates-MacGinitie Test in Reading Comprehension and Vocabulary. They also took the Stanford Achievement Test in Word Meaning, Paragraph Meaning, Arithmetic Computation, Arithmetic Concepts and Arithmetic Applications. The students took the same tests on both the pretest and posttest.

See pages 2-4

The Center's students made excellent progress in reading as measured by the tests. They made an average grade equivalent gain of 1.4 on the Gates-MacGinitie Vocabulary Test and 1.5 on the Stanford Achievement Word Meaning Test. Over the pre- and posttest period of time, the typical or normative student could expect to gain about seven months (.7) in grade equivalent gains. Only three of 47 students scored below this norm (.7 gain) on the Vocabulary Test and only six had a grade equivalent score of less than .7 on the Word Meaning Test.

See page 6

The students made an average grade equivalent gain of 1.2 on the Gates-MacGinitie Comprehension Test and a gain of 1.5 on the Stanford Achievement Paragraph Meaning Test. Only four students acquired less than the expected gain (.7) on the Comprehension Test and five students had less than expected gains on the Paragraph Meaning Test.

The students also made good if not excellent progress in Arithmetic Computation skills, understanding Arithmetic Concepts and Arithmetic Application. In all three areas, the average student made a grade equivalent gain of 1.0

See page 7

* * *

Acknowledgments

The writer wishes to thank the staff at the Bryant YES Center for their excellent cooperation while the study was being conducted. Special thanks are due Mr. Tom Kitto, Project Director, for his cooperation and help throughout the duration of the study.

Appreciation is extended to Dr. Richard Faunce, Director of Research and Evaluation, for his help in editing this report. A special thanks to members of the Research and Evaluation Department who have reviewed the study.

Finally, the study could not have been conducted without the cooperation and support of Area Assistant Superintendent, Mr. Vernon E. Indehar.

Table of Contents

	<u>Page</u>
Summary	ii
Acknowledgments	iii
Listing of Tables	v
Overview	1
Description of Achievement Tests	2
Gates-MacGinitie Vocabulary Test	3
Gates-MacGinitie Comprehension Test	3
Stanford Word Meaning Test	3
Stanford Paragraph Meaning Test	3
Stanford Arithmetic Computation Test	4
Stanford Arithmetic Concepts	5
Stanford Arithmetic Applications	5
Test Administration	5
Results of the Standardized Achievement Tests	6
Results of Gates-MacGinitie Vocabulary and Comprehension and Stanford Achievement Word Meaning and Paragraph Meaning Tests	6
Results of the Stanford Achievement Arithmetic Computation, Concepts, and Application Tests	7
Grade Equivalent Gain Breakdown for the Gates- MacGinitie Vocabulary and Comprehension Test and the Stanford Achievement Word Meaning, Paragraph Meaning, Arithmetic Computation, Arithmetic Concepts, and Arithmetic Application Tests	8
Conclusions and Recommendations	11

Listing of Tables

<u>Table</u>		<u>Page</u>
1	Grade Level and Sex of Bryant YES Center Students Who Took Both the Pre- and Posttest	2
2	Mean Raw Scores, Grade Equivalents, Publisher Percentiles, and Gains for Bryant YES Center Students on the Gates-MacGinitie and Stanford Achievement Reading Tests, Mid-October 1971 Pretest and Mid-May 1972 Posttest	6
3	Mean Raw Scores, Grade Equivalents, Publisher Percentiles, and Gains for Bryant YES Center Students on the Stanford Achievement Arithmetic Computation, Concepts, and Application Tests, Mid-October 1971 Pretest and Mid-May 1972 Posttest	7
4	Number and Percent Breakdown by Grade Equivalent Gain Category for Bryant YES Center Students on the Gates-MacGinitie Vocabulary and Comprehension Tests and the Stanford Achievement Word Meaning, Paragraph Meaning, Arithmetic Computation, Arithmetic Concepts and Arithmetic Application Tests, Mid-October 1971 Pretest and Mid-May 1972 Posttest	9

Minneapolis Public Schools
AN ANALYSIS OF THE BRYANT YES CENTER
STUDENT READING AND MATH GROWTH
1971-1972

Overview

The Bryant Youth Educational Support Center (YES) was established in the fall of 1968 through the combined efforts of the school, community, and industry to meet the needs of Bryant Junior High students who were socially maladjusted and/or academically underachieving. The primary objectives of the Center were to provide basic skills remedial instruction, and to modify inappropriate behavior.

The YES Center is designed to help those young people who have such significant educational or emotional problems that it is nearly impossible to meet their needs in a conventional classroom. The students referred to the Center are generally many years behind in basic skills achievement and manifest severe anti-social behaviors, which perpetuate their failure syndrome. The YES Center attempts to identify the student's problem areas and make as much progress toward remediating them as possible so that the student can return to a conventional school situation and profit from it.

During the 1971-72 school year, the YES Center had an operating budget of \$186,040. Honeywell Corporation contributed \$17,000; State Special Education, \$66,807; Title I, ESEA, \$56,308; Governor's Crime Commission, \$39,200 and the State-Federal Vocational Education reimbursement was \$6,725.

The reader who wishes to know more about the Bryant YES Center's program and operation should obtain the Project Director's report for the Bryant YES Center for 1971-1972. The report can be obtained by calling or writing the Research and Evaluation Department of the Minneapolis Public Schools.

This study reports student progress on standardized achievement tests in reading and math for the Bryant YES Center from mid-October 1971 to mid-May 1972. Over this period of time, the typical, or normative student could expect to gain about seven months in grade equivalent gains.

Fifty students were enrolled at the Center during 1971-1972. Forty-seven of these students took both the pre- and posttests. Table 1 provides a breakdown by grade level and sex for the students who were tested.

Table 1
Grade Level and Sex of Bryant YES Center Students
Who Took Both the Pre- and Posttest

Grade	Male	Female	Total
6	1	-	1
7	2	3	5
8	8	9	17
9	13	11	24
Total	24	23	47

The section which follows describes the tests which were given to the students.

Description of Achievement Tests

Two different achievement tests were given to determine the vocabulary and reading comprehension growth of the Center's students. The Gates-MacGinitie Survey D, Form 1M, Test in Reading Comprehension and Vocabulary was given to the students on both the pre- and posttest. In addition, the Stanford Achievement Tests, Intermediate II Battery, Form X, in Word Meaning and Paragraph Meaning was given.

To measure math growth, the Stanford Achievement Tests in Arithmetic Computation, Arithmetic Concepts, and Arithmetic Applications were given. Form X of the Intermediate II Battery was given on both the pre- and posttest.

The paragraphs which follow describe each test in more detail. The description of each test follows closely the description given by the publisher.

Gates-MacGinitie Vocabulary Test

The Vocabulary Test samples the student's reading vocabulary. This test has 50 items, each consisting of a test word followed by five other words, one of which is similar in meaning to the test word. The student's task is to choose the word which is most nearly synonymous to the test word. The first items are composed of easy, commonly used words. Generally, the words become less common and more difficult as the test progresses. The test is a "power" test and has a 15-minute time limit.

Gates-MacGinitie Comprehension Test

This test measures the student's ability to read complete prose passages with understanding. It contains 21 passages and 52 blank spaces, with each blank space having five possible completions. A student must decide which one of the five completions best conforms to the meaning of the whole passage. The first passages are simply written, but the later ones become progressively more difficult. The test is also a "power" test and has a 25-minute time limit.

Stanford Word Meaning Test

The Word Meaning Test consists of 48 multiple-choice items. In addition to items measuring knowledge of synonyms, of simple definitions, and of ready associations, there are included items designed to measure higher-level comprehension of the concepts represented by words, and fullness of understanding of terms.

The selection of words for inclusion in this test was based on considerations of the frequency of occurrence of the words in pupils' usage and in material which they read. The appropriateness of all words included, either as stimulus words or as alternative responses, was checked by reference to the available word counts.

The test is timed and students are allotted 12-minutes to complete the test.

Stanford Paragraph Meaning Test

The Paragraph Meaning Test consists of a series of paragraphs, graduated in difficulty. One or more words have been omitted from each

paragraph. The pupil's task is to demonstrate his comprehension of the paragraph by selecting from four choices that are afforded him the proper word for each omission. The test includes complete paragraphs about which questions are asked. They are answered by selecting one of four possible choices. According to the authors, the test provides a functional measure of the pupil's ability to comprehend connected discourse involving levels of comprehension varying from extremely simple recognition to the making of inferences from what is stated in several sentences.

Students can make a total of 60 responses to the various items on the test. The test is timed and the students are allowed 30-minutes to take the test.

Stanford Arithmetic Computation Test

According to the test authors, the Arithmetic Computation Test measures proficiency in the computational skills appropriate for Grades 5 and 6. The computation items were drawn from the fundamental operations of addition, subtraction, multiplication, and division. The tests are in multiple-choice form; the response "not given" (NG) is included as one of the choices in each item in order to discourage guessing by pupils not able to perform correctly the required operations. The time limit for the test is generous, reducing the emphasis on computational speed. The exercises are representative of the usual curriculum and textbook patterns of content.

The following aspects of the different operations are included:

1. Addition: Carefully chosen distribution of number facts. Carrying to tens' place, to hundreds' place, to thousands' place, and so on. Increasing number of digits in the addends, broken columns. Whole numbers, decimal fractions, money notation. Emphasis upon the carry facts that may occur in multiplication examples.
2. Subtraction: Careful distribution of subtraction facts. Regrouping (borrowing) in a variety of possible combinations of place-value positions. Zero difficulties in both minuend and subtrahend, "hidden zero" as in $213 - 67$, disappearing left as in $146 - 83$, and with a gap as in $4397 - 889$. Systematic coverage of the types of subtraction used in long division.
3. Multiplication: Systematic distribution of the primary facts in multiplication. Carrying in various positions. Inclusion of zeros in different positions of both factors in order to sample all possible sources of error involving place-value position.

4. Division: Systematic sampling of number facts for use in dividends, divisors, and quotients. Careful sampling of the various "types" of division, including the zero in either or both of the factors (divisor or quotient) and the product (dividend).

The four operations are extended to include computation with fractions, solution of a number sentence, and understanding of percent.

Students are allowed 35-minutes to complete the test which contains 35 problems.

Stanford Arithmetic Concepts

The Arithmetic Concepts Test measures in a 32-item multiple-choice test the understanding of place value, Roman numerals, operational terms, the meaning of fractions and of multiplication, interrelationship of the two fundamental operations (addition and multiplication) and their inverses (subtraction and division), directional numbers, number series, number names, estimation, average, number sentences, meaning of percent, decimal fraction positions, common denominator, rounding whole numbers, decimal and common fraction equivalents, reduction of fractions, and geometric terms.

The students are allowed 20-minutes to complete the test.

Stanford Arithmetic Applications

According to the publisher, the Arithmetic Applications Test consists of 39 multiple-choice items which measure reasoning with problems taken from life experiences. The general reading vocabulary has been kept much below the problem-solving level being measured. Computation difficulty has been controlled so that it is only a minor factor.

The pupil is required to apply his mathematical knowledge and ability to think mathematically in practical situations which concern area, volume, ratio, graphs, tables, scales, percent, business transactions, averages, problems with circles and other geometric figures, and the selection of mathematical models for problems.

Students are allowed 32-minutes to complete the test.

Test Administration

The tests for both the pre- and posttest administration were administered under normal testing conditions as described in the test manuals, with testing conditions for both the pre- and posttests held as identical

as possible.

Each test was hand scored at the Center and at the end of the year the results of the testing program were sent to the Research Department for analysis.

An analysis of the testing is presented in the next section.

Results of the Standardized Achievement Tests

The results of the progress the Bryant YES students made in reading and math will be presented in three sections. The first section reports the test results for the Gates-MacGinitie and Stanford Achievement Vocabulary and Comprehension Tests. The second presents the results of the Stanford Achievement Math Tests and the third section reports grade equivalent gains by various grade equivalent categories for each test that was taken by the students.

Results of Gates-MacGinitie Vocabulary and Comprehension and Stanford Achievement Word Meaning and Paragraph Meaning Tests

Table 2 reports the results for the reading comprehension and vocabulary sections of the Gates-MacGinitie and Stanford Achievement Tests.

Table 2
Mean Raw Scores, Grade Equivalents, Publisher Percentiles,
and Gains for Bryant YES Center Students on the Gates-
MacGinitie and Stanford Achievement Reading Tests,
Mid-October 1971 Pretest and Mid-May 1972 Posttest
N=47

Test	Pretest	Posttest	Gain	Test	Pretest	Posttest	Gain
<u>Gates-MacGinitie Vocabulary Test</u>				<u>Stanford Achievement Word Meaning Test</u>			
Mean Raw Score	23	31	8	Mean Raw Score	18	27	9
Grade Equivalent	4.4	5.8	1.4	Grade Equivalent	4.9	6.4	1.5
Publisher Per- centile	18	31	13	Publisher Per- centile	23	40	17
<u>Gates-MacGinitie Comprehension Test</u>				<u>Stanford Achievement Paragraph Meaning Test</u>			
Mean Raw Score	23	33	10	Mean Raw Score	19	31	12
Grade Equivalent	4.0	5.2	1.2	Grade Equivalent	4.1	5.6	1.5
Publisher Per- centile	16	24	8	Publisher Per- centile	10	26	16

Table 2 indicates that the Bryant YES Center students made exceptionally good gains in both vocabulary and comprehension regardless of the test used to measure the gain.

Bryant YES Center students made grade equivalent gains of 1.4 in vocabulary when the Gates-MacGinitie Test was used, and 1.5 when the Stanford Test was used to determine the gain. Considering that only seven months had elapsed between the pre- and posttest period, these gains must be considered excellent.

It should also be noted on the vocabulary portions of the tests that the Bryant YES Center students were well qualified to receive Title I assistance (one or more grade levels below grade level). Most students at Bryant at pretest time were in the 8th or 9th grade. Thus, most of the Center's students were about three to four grade levels and in vocabulary.

When the Comprehension and Paragraph Meaning Test results were examined, the Center's students again made good grade equivalent gains. The students made grade equivalent gains of 1.2 on the Gates-MacGinitie Comprehension Test and on the Stanford Paragraph Meaning Test, 1.5.

Results of the Stanford Achievement Arithmetic Computation, Concepts, and Application Tests

Table 3 reports the results of the Stanford Achievement Math Tests.

Table 3

Mean Raw Scores, Grade Equivalents, Publisher Percentiles, and Gains for Bryant YES Center Students on the Stanford Achievement Arithmetic Computation, Concepts, and Application Tests, Mid-October 1971 Pretest and Mid-May 1972 Posttest

N=47

Test	Pretest	Posttest	Gain
<u>Arithmetic Computation</u>			
Mean Raw Score	12	18	6
Grade Equivalent	5.0	6.0	1.0
Publisher Percentile	18	30	12
<u>Arithmetic Concepts</u>			
Mean Raw Score	9	13	4
Grade Equivalent	4.9	5.9	1.0
Publisher Percentile	22	26	4
<u>Arithmetic Applications</u>			
Mean Raw Score	11	15	4
Grade Equivalent	4.4	5.4	1.0
Publisher Percentile	16	20	4

Table 3 indicates that on all three measures -- computation, concepts, and application -- the Center's students made grade equivalent gains of one year. On all three measures the students were well below grade level on both pre- and posttest measures. The gains speak for themselves. Considering that only seven months had elapsed between testing, the gains are well above what might normally be expected of average students.

At the of the year the students performed about as well on the Computation and Concepts tests as an average sixth grader who had just entered sixth grade. On the Application Test, the students were five and six months below their performance on the other two tests at both the pre- and posttest and were performing about as well at the end of the year as a student who was in the fourth month of the fifth grade.

Grade Equivalent Gain Breakdown for the Gates-MacGinitie Vocabulary and Comprehension Test and the Stanford Achievement Word Meaning, Paragraph Meaning, Arithmetic Computation, Arithmetic Concepts, and Arithmetic Application Tests

Table 4 on the next page presents the results when individual student achievement grade equivalent gains were broken down by gain category.

Reading Comprehension and Vocabulary Grade Equivalent Gains. Table 4 indicates that of 47 students who took the Gates-MacGinitie Vocabulary Test, only three students made gains less than what an average or typical student might expect to make (.7 gain). Eighty-six percent made vocabulary gains of one year or more and 35 percent made gains of 1.7 years or more.

On the Stanford Word Meaning Test, similar results can be observed. Only six students made gains of six months or less and 77 percent made gains of one year or better. Thirty percent had grade equivalent gains of 1.7 or better.

When the Gates-MacGinitie Reading Comprehension test gains were analyzed, it was observed that only four students made less than expected gains while the remaining 43 students made average or above average gains. Eighty-three percent of the students made gains of one year or more and 34 percent made gains of 1.7 or better.

When the Stanford Paragraph Meaning Test score gains were analyzed, only five students made gains of six months or less. Of the 42 students who made average (.7) or better gains, 38 made gains of one year or more, and 18 (38% of total) made gains of 1.7 or better.

Table 4

Number and Percent Breakdown by Grade Equivalent Gain Category For
Bryant YES Center Students on the Gates-MacGinitie Vocabulary
and Comprehension Tests and the Stanford Achievement Word
Meaning, Paragraph Meaning, Arithmetic Computation,
Arithmetic Concepts and Arithmetic Application
Tests, Mid-October 1971 Pretest and
Mid-May 1971 Posttest
N=47

Grade Equivalent Gains	Gates Vocabulary N	Gates Vocabulary %	Gates Comprehension N	Gates Comprehension %	Stanford Word Meaning N	Stanford Word Meaning %	Stanford Paragraph Meaning N	Stanford Paragraph Meaning %	Stanford Arithmetic Computation N	Stanford Arithmetic Computation %	Stanford Arithmetic Concepts N	Stanford Arithmetic Concepts %	Stanford Arithmetic Application N	Stanford Arithmetic Application %
2.4 +	4	9%	2	4	2	4	8	17	5	11	0	-	0	-
1.7 - 2.3	12	26	14	30	12	26	10	21	7	15	8	17	3	6
1.0 - 1.6	24	51	23	49	22	47	20	43	24	51	22	47	13	28
.7 - .9	4	9	4	9	5	11	4	9	5	11	9	19	6	13
.3 - .6	2	4	4	9	5	11	2	4	5	11	4	9	20	43
.2 or less	1	2	0	-	1	2	3	6	1	2	4	9	5	11
Total ¹	47	101	47	101	47	101	47	100	47	101	47	101	47	101

¹Percent totals exceed 100 in some cases because of rounding.

It is clear from an analysis of the gain scores in Reading Comprehension and Vocabulary that the Center's students made excellent progress during the seven months between pre- and posttest.

Math Grade Equivalent Gains. Table 4 indicates that only six students (13%) made less than average gains in Arithmetic Computation. Forty-one students (88%) made average or greater gains, 77 percent (36 students) made gains of one year or more and 26 percent made gains of 1.7 or better.

In Arithmetic Concepts, eight students had gains of six months or less while 64% had gains of one year or more. Eighty-two percent of the students made average gains or better.

Table 4 indicates that fewer students made substantial progress in Arithmetic Application compared to Computation Skills and Concepts. Fifty-four percent (25 students) made six months or less grade equivalent gains. However, only five students made negligible or no gain (.2 or less) and 34% (16 students) made one year or more gains.

Thus, in the math area, the Center's students made good gains, on the average, in all three test areas, but fewer students made substantial progress in Arithmetic Application.

Conclusions and Recommendations

Students enrolled at the Center were eminently qualified for Title I services. At the beginning of the school year the typical student at the YES Center was three to four years below grade level in reading and mathematics skills.

Bryant YES Center students made substantial gains in reading and mathematics basic skills in the 1971-72 school year. Progress was made by nearly all the individual students and did not represent merely average gains for the group.

Over a seven month period, Bryant YES Center's students made an average grade equivalent gain of 1.2 and on the Stanford Achievement Paragraph Meaning Test a gain of 1.5 was made. Only four students acquired less than an average gain (.7) on the Comprehension Test and five students had less than average gains on the Paragraph Meaning Test.

The students also made good, if not excellent progress in arithmetic computation skills, understanding arithmetic concepts and arithmetic application. In all three areas, the average gain was 1.0.

On the basis of these facts and those presented earlier in the study, only one conclusion can be drawn about the progress made in reading and math by the Bryant YES Center students, that is, that the Center made excellent progress in both areas.

Although the students made excellent gains in reading and math, most were still far below grade level at the end of the year. While it may not be possible to retain these students at the YES Center for another year, it is recommended that these students continue to receive a highly personalized education such as they received at the YES Center. Special attention should be given to providing them with an individualized reading and math program suitable for their achievement level so that they can continue the excellent progress in reading and math they made at the YES Center during the 1971-1972 school year.